

REMARKS

I. Status of the Claims:

Claims 1-14 were pending in the application prior to this submission. All of pending claims 1-14 were rejected by the Examiner in the previous non-final Office Action.

By this amendment, claims 1, 2, 4, 6-9 and 11-14 have been amended. Claim 3 has been canceled herein without prejudice or disclaimer. No new matter has been introduced, and thus, entry and consideration of this Amendment is respectfully requested.

II. Correction of Typographical Error in the Specification:

Though not identified by the Examiner, Applicants have discovered that the specification, as originally filed, contains a typographical error on page 8, line 12. The original specification sets forth, "The fist microprocessor 100..." Applicants have now corrected this sentence herein to recite, "The first microprocessor 100..." in accordance with at least FIG. 1.

III. Response to Claim objections under 37 U.S.C. §102

Claims 1-4, 6, 8, 9, 11, 13 and 14 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. 7,061,530 to Koyama (hereafter "Koyama"). Claims 1, 5, 7, 8, 10 and 12 also stand rejected under as being anticipated by U.S. 6,160,578 to Carroll et al. (hereafter "Carroll"). More specifically, the Examiner alleges that each and every limitation of pending claims 1, 2 and 4-14 is anticipated by at least one of the Koyama or Carroll references.

Initially, Applicants respectfully note that while the Examiner stated that claim 9 was rejected as being anticipated by Koyama, it does not appear that claim 9 was ever discussed in the non-final Office Action. The Examiner may have accidentally thought that claims 8 through 11 were rejected instead of claims "8 and 11" as set forth in the pending Office Action.

Koyama is directed to a semiconductor circuit usable in tuning the performance of an analog to digital (A/D) converter usable in creating a digital video signal from an analog signal (column 4, lines 35-49). The phase of the timing signal that drives the A/D converter may be corrected, for example, based on a noise measurement (column 6, line 66-column 7, line 23). Further embodiments include adjusting the phase based on a continual measurement of optimal

phase difference (column 7, lines 25-46). The adjustment of phase may be performed through the selection of one of a plurality of fixed phase shift circuits (column 8, lines 47-60).

Carroll is directed to a high speed camera circuit including improved processing through A/D converter tuning (abstract). The A/D configuration, such as presented in FIG. 3., also automatically demultiplexes the two multiplexed input signals received from the CCD array 12 (column 10, lines 9-25). Variable predetermined phase settings may then be selected from the in the camera based on amount of phase deemed necessary by the microprocessor in view of the calibration settings mad in view of the cable being used (FIG. 4 and column 10, lines 39-67).

Applicants respectfully request reconsideration of the present application in view of the claim amendments and/or remarks now presented herein. For example, independent claim 1, as amended, now recites the following:

1. (Currently Amended) An image sensing apparatus having an image sensor for sensing an image of an object, comprising:
 - a temperature sensor that measures temperature;
 - an analog-digital converter that operates at a predetermined frequency and converts an analog signal read from the image sensor to a digital signal; and
 - a controller that controls a relationship between a phase of a timing signal for reading out the analog signal from the image sensor and a phase of a timing signal for operating said analog-digital converter in accordance with the temperature measured by the temperature sensor.

The amendment to claim 1 is supported by at least page 19, line 24 to page 20, line 2, of the specification, and steps S102 and S109 as disclosed in FIG. 3. Applicants respectfully assert that the amendment to claim 1 further distinguishes the claimed invention from Koyama because the section of this reference that was cited by the Examiner (column 7, lines 25-35) merely discusses that temperature may effect the performance of circuit components. Applicants contend that this general observation concerning the influence of temperature on circuit performance would not anticipate the claims, as amended, in that the claims now clarify that a measured temperature (e.g., via thermometer circuit 109) may be used as an input when tuning the phase of the ADTRG signal. On the contrary, Koyama utilizes a noise measurement for adjusting the phase of a timing signal. In particular, Koyama merely discloses a digital/analog mixed type semiconductor integrated circuit in which the optimum

phase difference generating circuit is selected from the first to k-th clock phase difference generating circuits 62-64 at predetermined interval (column 7, line 47 to column 8, line 5).

In regard to Carroll, Applicants did not find any recitation or implication of A/D converter phase tuning based on measured temperature. Carroll only discloses a programmable phase shifter 26 that provides clock signals of different phases (column 10, lines 39-67).

Applicants have also amended independent claim 8 in order to further clarify the distinguishable aspects of the claimed invention over the cited references. Claim 8 now recites:

8. (Currently Amended) An image sensing apparatus having an image sensor for sensing an image of an object, comprising:
 - an analog-digital converter that operates at a predetermined frequency and converts an analog signal read from the image sensor to a digital signal; and
 - a controller that controls a relationship between a phase of a timing signal for reading out the analog signal from the image sensor and a phase of a timing signal for operating said analog-digital converter on the basis of a comparison between signals obtained by relatively shifting in time sequence the phase of the timing signal for reading out the analog signal and the phase of the timing signal for operating said analog-digital converter, and converting the analog signal by said analog-digital converter for each shifted phase.

Support for this amendment may be found in the second exemplary embodiment of the present invention, the discussion of which starts on page 24 of the originally filed specification. Claims 8-12 and 14 include, *inter alia*, controlling the relationship between the phase of a timing signal for reading out the analog signal from the image sensor and the phase of a timing signal for operating the A/D converter on the basis of a comparison between signals obtained by relatively shifting in time sequence the phase of the timing signal for reading out the analog signal and the phase of the timing signal for operating said analog-digital converter, and converting the analog signal by said analog-digital converter for each shifted phase.

By contrast, Koyama discloses the use of "k" clock phase difference generating circuits 16-18, and to then select one of the clock signals using selection circuit 26 (column 6, lines 15-48). As a result, Koyama does not recite or imply shifting the phases in time sequence.

Moreover, while Carroll discloses that the programmable phase shifter 26 includes variable phase shifter circuit 85-88 to generate clock signals of different phases, there is no teaching or suggestion regarding relatively shifting in time sequence the phase, as claimed.

In view of the above, Applicants respectfully assert that claims 1, 2 and 4-14, as amended, are clearly distinguishable from the cited references, taken alone or in combination, and therefore, respectfully request that the 35 U.S.C. §102(e) rejection now be withdrawn.

CONCLUSION

Based on the foregoing amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application.

AUTHORIZATION

The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. 13-4500, Order No. 1232-5207.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No 13-4500, Order No. 1232-5207.

Respectfully submitted,
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